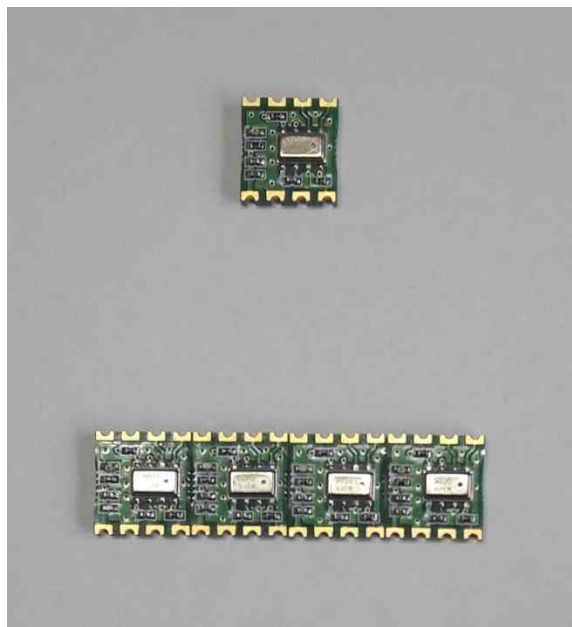


OSTSen-3115 User Guide



Ver 1.0

Onsystem

1. OSTSen-3115 Overview

OSTSen-3115 is an absolute pressure sensing module, which is based on NXP Semiconductors MPL3115A2. The MPL3115A2 is a compact, piezoresistive, absolute pressure sensor with an I2C digital interface. MPL3115A2 has a wide operating range of 20 kPa to 110 kPa, arrange that covers all surface elevations on earth. The MEMS is temperature compensated utilizing an on-chip temperature sensor. The pressure and temperature data is fed into a high resolution ADC to provide fully compensated and digitized outputs for pressure in Pascals and temperature in °C. The compensated pressure output can then be converted to altitude, utilizing the special formula provided in meters. The internal processing in MPL3115A2 removes compensation and unit conversion load from the system MCU, simplifying system design.

MPL3115A2's advanced ASIC has multiple user programmable modes such as power saving, interrupt and autonomous data acquisition modes, including programmed acquisition cycle timing, and poll-only modes. Typical active supply current is 40 uA per measurement-second for a stable 10 cm output resolution.

2. Application

- High-accuracy altimetry and barometry
- Smartphones, tablets and wearable devices
- GPS applications: dead reckoning, map assist, navigation, enhancement for emergency services
- Weather station equipment

3. Features

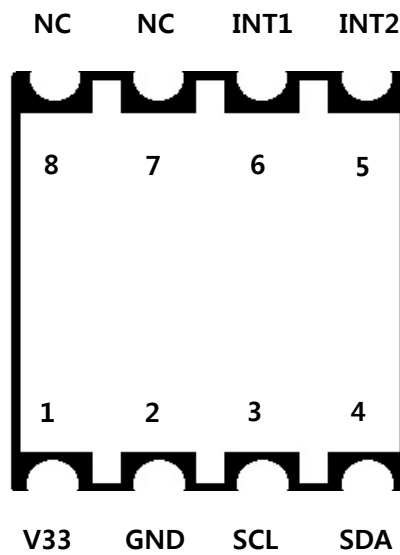
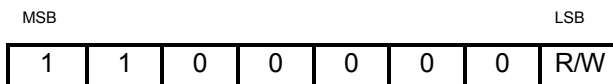
- Operating range : 20kPa to 110kPa absolute pressure
- -700m to be equivalent altitude at 50 kPa
- Calibrated range : 50kPa to 110kPa absolute pressure
- Calibrated temperature output : -40°C to 85°C
- I2C digital output interface (up to 400KHz)
- Fully compensated internally
- Precision ADC resulting in 0.1 meter of effective resolution
- Direct reading
 - Pressure : 20-bit measurement (Pascals)
 - . 20 to 110 kPa
 - Altitude : 20-bit measurement (Meters)
 - . - 698 to 11,775 m
 - Temperature : 12-bit measurement (°C)
 - . -40°C to 85°C
- Programmable interrupts
- Autonomous data acquisition
 - Embedded 32-sample FIFO
 - Data logging up to 12 days using the FIFO
 - One-second to nine-hour data acquisition rate
- 1.95V to 3.6V supply voltage, internally regulated
- 1.6V to 3.6V digital interface supply voltage
- Operating temperature from -40°C to 85°C

4. Application Information

4.1 Module Pin Out and Signal Description

Pin Number	Pin Name	Pin Description
1	V33	Power supply voltage (1.95V ~ 3.6V)
2	GND	Power supply ground
3	SCL	I2C serial clock (SCL) 7bit device address : 0x60
4	SDA	I2C serial data (SDA)
5	INT2	Pressure interrupt 2
6	INT1	Pressure interrupt 1
7, 8	NC	Not Connect

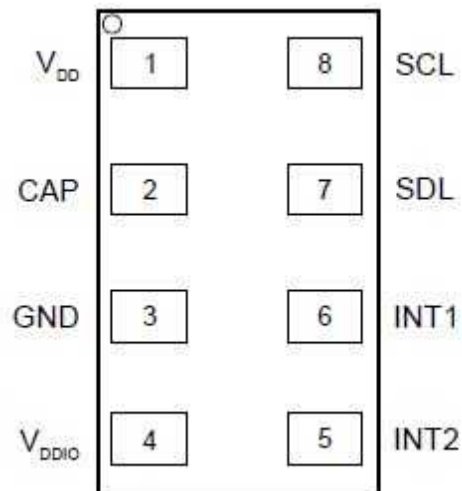
- **MPL3115A2 I2C 7bit Device Address : 0x60**



< Top View >

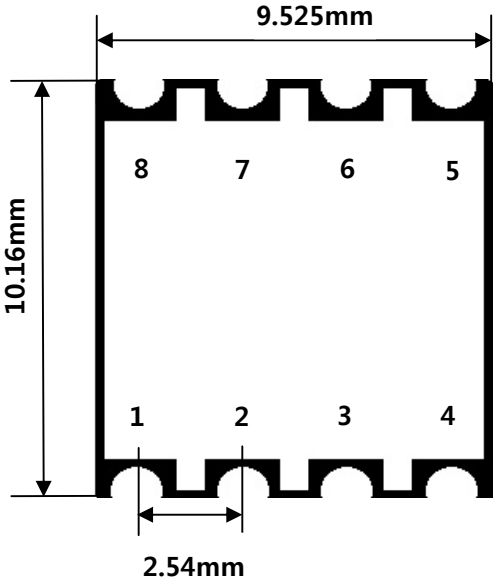
4.2 MPL3115A2 Pin out and Signal Description

Pin Number	Pin Name	Pin Description
1	VDD	Power supply (1.95V to 3.5V)
2	CAP	External capacitor
3	GND	Ground
4	VDDIO	Digital interface power supply (1.62V to 3.6V)
5	INT2	Pressure interrupt 2
6	INT1	Pressure interrupt 1
7	SDL	I2C serial data
8	SCL	I2C serial clock



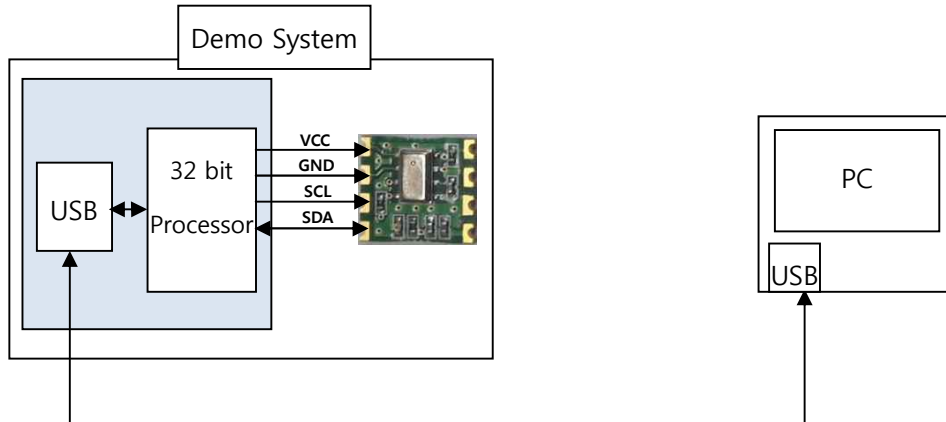
< MPL3115A2 Pinout (top view) >

5. Module Dimension

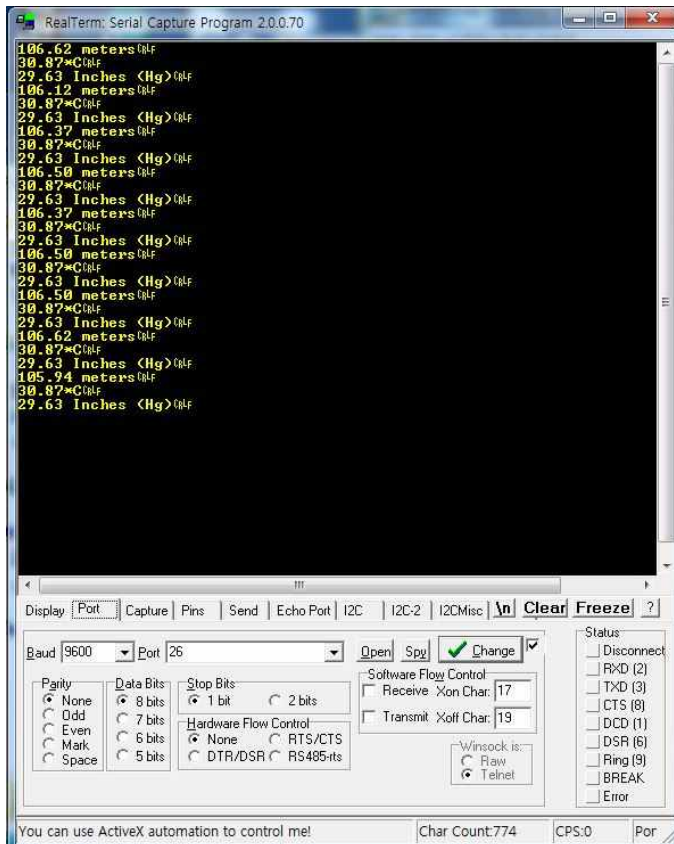


< OSTSen-3115 module >

6. Demo System



OSTSen-3115 Data Display on PC



7. Reference

- 1) <http://www.nxp.com/products/automotive-products/sensors/pressure-sensors-for-automotive/barometric-pressure-15-to-115-kpa/20-to-110kpa-absolute-digital-pressure-sensor:MPL3115A2?fsrch=1&sr=1&pageNum=1>
 - 2) <http://www.nxp.com/docs/en/data-sheet/MPL3115A2.pdf>
 - 3) https://github.com/sparkfun/MPL3115A2_Breakout/tree/V_H1.1_L1.2.0
 - 4) https://github.com/sparkfun/MPL3115A2_Breakout/tree/V_H1.1_L1.2.0/Libraries/Arduino
- If you need more information about OSTSen-3115, contact ostsen@naver.com.